

## Notes on *Goodia* (Fabaceae, Bossiaceae)

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### Abstract

Two species, *Goodia lotifolia* Salisb. and *G. medicaginea* F. Muell., are recognised. A key to species, descriptions and distribution maps are provided. The difficulty in identifying material in the absence of mature pods containing seeds is discussed. *Goodia medicaginea* is lectotypified.

### Introduction

The genus *Goodia* was described by Salisbury in 1806, and commemorates Peter Good, horticulturist and botanical collector who accompanied Robert Brown to Australia on board H.M.S. Investigator where he died in Sydney in 1803. *Goodia* is a distinctive genus which is readily distinguished from all other genera in the tribe Bossiaceae by having pinnately 3-foliolate leaves. Another character that has been used to distinguish the genus from other members in the tribe Bossiaceae is that the pod valves do not usually recurve on dehiscence (Crisp and Weston 1987). However, although generally the case, this distinction is not absolute as occasional dehiscent pods with recurved valves have been observed amongst material from Victoria and Tasmania.

As discussed by Lee (1984), the status of taxa in *Goodia* has long been in question and opinion has been divided over whether one, two or three species should be formally recognised. Bentham (1864) recognised two species, namely, *G. lotifolia* Salisb. and *G. pubescens* Sims, treating *G. medicaginea* F. Muell. as a synonym of the former. *Goodia pubescens* was subsequently reduced to varietal rank within *G. lotifolia* by Williamson (1931). Curtis (1956) followed Bentham in treating *G. lotifolia* and *G. pubescens* as separate species, but Willis (1973) and Weber (1986) accorded *G. pubescens* varietal rank. Willis (1973) and Lee (1984) maintained *G. medicaginea* as a distinct species but Weber (1986) felt that the nature of the variation in the South Australian populations did not permit the recognition of *G. medicaginea* as a species distinct from *G. lotifolia*.

Following an evaluation of the genus throughout its range, I am persuaded to recognise *G. lotifolia* and *G. medicaginea* as distinct species. Of the character states assessed, the length of the foot of the aril at its point of attachment to the seed provides the most reliable means of separating the two species throughout their ranges. Specimens can be referred to one species or the other very readily on the basis of this character. In *G. medicaginea* the short foot that attaches the aril to the seed is up to 1.1 mm long whereas in *G. lotifolia* the foot is 1.4–2 mm long. Unfortunately, the infrequent presence of mature seeds on specimens reduces the utility of this character: seeds are present on fewer than 10% of the herbarium specimens examined. It is acknowledged that in the

absence of mature fruit it is unquestionably difficult on occasions to differentiate *G. medicaginea* from *G. lotifolia* because most of the diagnostic characters traditionally used to differentiate the species are unreliable. Alleged differential characters such as flower size, length of the raceme, length and shape of the calyx-lobes and the length of the lower lobes in relation to the length of the tube, corolla colour, the size of the pods, and bark characteristics tend to be correlated, with varying degrees of imperfection, with the difference in the length of the foot of the aril at its point of attachment to the seed. Unfortunately, reliance has to be placed on these latter less satisfactory differential tendencies in the absence of mature seeds, although they are correlated to some extent with distribution.

All Western Australian and South Australian *Goodia* populations are referable to *G. medicaginea*, and the Tasmanian populations to *G. lotifolia*. Both species occur in Queensland, New South Wales and Victoria but the distributional ranges of the two species are known to overlap only in south-western and north-eastern Victoria. In these areas, *G. medicaginea* tends to favour drier and often more inland sites than *G. lotifolia*. The distribution of *Goodia* taxa in Queensland and northern New South Wales is imperfectly understood. Most of the material available currently is inadequate which renders identification difficult. Good fruiting material is required to clarify the distributions of the two species in Queensland and northern New South Wales.

The degree of development of the indumentum on the vegetative parts does not provide a means of separating *G. lotifolia* and *G. medicaginea* as specimens of *G. medicaginea* are often as pubescent as those of *G. lotifolia* var. *pubescens*.

In the field, mature *Goodia* plants often appear as though they are under stress. This impression is obtained because the outer stems tend to die back from the periphery towards the centre of the plant leaving the dead material exposed. New watershoots are produced from the older stems or, more usually, from the base of the plant.

### Description of Genus

*Goodia* Salisb., *Parad. Londin.* 1: t. 41 (1806). Type: *G. lotifolia* Salisb.

*Shrubs* to 4m high. *Leaves* pinnately 3-foliolate, alternate, petiolate; leaflets entire, the terminal one largest. *Stipules* caducous. *Flowers* in terminal and leaf-opposed racemes, each flower subtended by a single bract and a pair of bracteoles, the bract and bracteoles linear or ovate, caducous. *Calyx* with the 2 upper lobes broad and united into a 2-toothed lip, the lower 3 teeth narrow. *Corolla* yellow or orange with red, brown, green or purplish markings. *Stamen*-filaments joined in a sheath split open on the upper side; anthers uniform, dorsifixed, with a broad brown connective. *Ovary* glabrous or almost so. *Pods* obliquely rhomboid-oblong, stipitate, 2–4-seeded, valves thin, margined beyond the upper sutural nerve. *Seeds* ovoid, with an elliptic or linear hilum covered by a hooded cap-like aril.

### Distribution

An endemic genus of two species occurring in all States and the Australian Capital Territory.

### Notes

In New South Wales and Victoria the two species usually can be distinguished relatively easily; *G. medicaginea* tends to have shorter racemes, smaller flowers, the lower 3 calyx-lobes less than 2 mm long, shorter than the tube and broadly-lanceolate to deltoid, a corolla which is dull yellow to orange, and smaller pods. With the exception of a few

cultivated specimens, in all of the fruiting South Australian material examined, which represents populations from throughout the distributional range in the State, the foot that attaches the aril to the seed is less than 1.1 mm long. On the strength of this, all of the South Australian populations are referred to *G. medicaginea*. The racemes in South Australia are often as long as any found in *G. lotifolia* and the lower calyx-lobes are sometimes longer than the tube. It is not uncommon to find on the same branch some flowers in which the lower calyx-lobes are longer than the tube and other flowers in which the lower calyx-lobes are shorter than the tube. The branchlets in the South Australian populations are often fairly densely pubescent and some specimens are as pubescent as those found in *G. lotifolia* var. *pubescens*.

The colour of the corolla in the two species appears to differ in some respects but this is difficult to confirm from herbarium specimens as few collectors describe flower colour in any detail. Careful field observations are required to establish whether the alleged differences are taxonomically meaningful. Likewise, there is a suggestion that the colour of the mature foliage differs. The bark on the older stems of the two species appears to differ slightly, that of *G. medicaginea* often being dark reddish-brown or purplish and with numerous inconspicuous transverse constrictions or wrinkles that sometimes result in the surface being minutely warted. In contrast, the stems of *G. lotifolia* are usually yellowish- or reddish-to olive-brown and smooth. Bark characters are seldom mentioned by collectors and older stems are infrequently collected.

In common with many legumes, *Goodia* plants usually favour disturbed sites.

### Key to Species

1. Foot of aril 1.4–2 mm long at its point of attachment to the seed, the hilum linear; flowers 9–14 mm long, in racemes 4–10 cm long; lower 3 calyx-lobes usually as long as or longer than the tube and more than 2 mm long in mature flowers, linear-lanceolate; bark on older stems relatively smooth ..... 1. *G. lotifolia*
1. Foot of aril up to 1.1 mm long at its point of attachment to the seed, the hilum elliptical; flowers 6–10.5 mm long, in racemes 1–5 (10) cm long; lower 3 calyx-lobes usually shorter than the calyx-tube, broad-lanceolate to deltoid and less than 2 mm long in mature flowers; bark on older stems often minutely warted..... 2. *G. medicaginea*

### Descriptions of Species and Varieties

**1. *Goodia lotifolia*** Salisb., *Parad. Londin.* 1: t. 41 (1806). *Type*: ‘Sponte nascentem in New South Wales, legit P. Good’; t. 41 in Salisb., *Parad. Londin.* 1:(1806).

*Goodia latifolia* W.T. Aiton ex Colla, *Hort. Ripul.* 1: 62 (1824). Orthographic variant of *G. lotifolia*.

*Illustration*: Sims in Curtis, *Bot. Mag.* 23: t. 958 (1806).

*Shrub* to 4 m high, often fairly slender; young branchlets glabrous to densely clothed with appressed or spreading hairs. *Leaflets* obovate to obovate-cuneate or elliptic, 5–35 mm long, 3–29 mm wide, the terminal one usually obovate, glabrous throughout or lower surface sparingly to densely clothed with appressed to spreading hairs; petiole 5–30 mm long. *Racemes* 4–10 cm long. *Flowers* 9–14 mm long, on pedicels 4–10 mm long. *Calyx* 4–6 mm long, the 3 lower lobes usually as long as or longer than the tube in mature flowers. *Standard* bright yellow internally with a conspicuous deep red or reddish-brown horseshoe-shaped flare around the throat or on either side of the throat; wings externally bright yellow apically, purplish-brown basally; keel externally greenish-yellow basally but suffused with red apically. *Pods* obliquely ovate to oblong,

narrowed basally into a slender stipe, usually 1.6–3.8 cm long excluding the stipe. *Seed*: foot of the aril 1.4–2 mm long. **Golden-tip**.

1. Young branchlets, lower surfaces of leaflets, calyces and pedicels glabrous or sparingly clothed with appressed hairs ..... 1a. var. *lotifolia*
1. Young branchlets and lower surfaces of leaflets (and often calyces and pedicels) densely clothed with appressed or spreading hairs ..... 1b. var. *pubescens*

**1a. *Goodia lotifolia* var. *lotifolia*.**

Diagnostic features as in key. (Fig. 1a–c)

*Distribution and Habitat*

South-eastern Queensland, eastern New South Wales, Victoria, Tasmania (Bass Strait islands only) (Fig. 2). Common understorey species in wet and dry sclerophyll forest. Flowers August–November.

*Representative Specimens* (187 specimens examined)

QUEENSLAND: Moreton Distr., Harland Road, Mount Glorious, *A.R. Bean 2159* (BRI). NEW SOUTH WALES: South Coast, Wallagaraugh Forest Drive, *M.G. Corrick 6054* (CBG, MEL). AUSTRALIAN CAPITAL TERRITORY: slopes of Mt Tidbinbilla on path to Kangaroo Gap, *N.T. Burbidge 5593* (BRI, CANB). VICTORIA: Mt Elizabeth No. 2 State Forest, 2 km below the summit of Mt Elizabeth, *J.H. Ross 3421* (BRI, CANB, MEL, NSW). TASMANIA: Cape Barren Island, *J.S. Whinray 618* (MEL).

**1b. *Goodia lotifolia* var. *pubescens*** (Sims) H.B. Will. in Ewart, *Fl. Victoria* 658 (1931). *Goodia pubescens* Sims, *Bot. Mag.* 32: t. 1310 (1810). *Type*: ‘native of Van Diemen’s Island ... Communicated by Messrs Loddiges and Sons’, t. 1310 in *Bot. Mag.* (1810).

*Goodia subpubescens* Sweet, *Hort. Brit.* 110 (1826), *nomen nudum*.

Diagnostic features as in key.

*Distribution and Habitat*

Occurs sporadically in south-eastern Queensland, eastern New South Wales, Victoria and mainland Tasmania (Fig. 3), in dry and wet sclerophyll forest. Flowers August–November.

*Representative Specimens* (59 specimens examined)

QUEENSLAND: Moreton District, Canungra to Mt Tamborine Road, c. 2km S of Mt Tamborine, *W.F.J. McDonald 1496* and *W.G. Whiteman* (BRI). NEW SOUTH WALES: Track to Nothofagus Mtn, 11.3 km N of Woodenbong, *R. Coveny 5172* (BRI, MEL, NSW). VICTORIA: Mt. Slide Rd between Yarra Glen and Kinglake, *M.G. Corrick 10214* (CBG, MEL). TASMANIA: Archers Sugarloaf, *A. Moscal 12499* (HO, MEL).

*Notes*

Some specimens from the north coast of New South Wales, for example *Wilcox* (MEL 1058235) from the Clarence River, have unusually large pods up to 5.2 cm long (excluding the stipe) and 1.5 cm wide. Mueller assigned the manuscript name ‘var. *macrocarpa*’ to some of these large-podded specimens but his unpublished variety is not upheld. Similarly, he assigned the manuscript name ‘var. *velutina*’ to some densely pubescent specimens but this unpublished variety is not recognised either. The large pods on these specimens from the north coast of New South Wales are in contrast to the

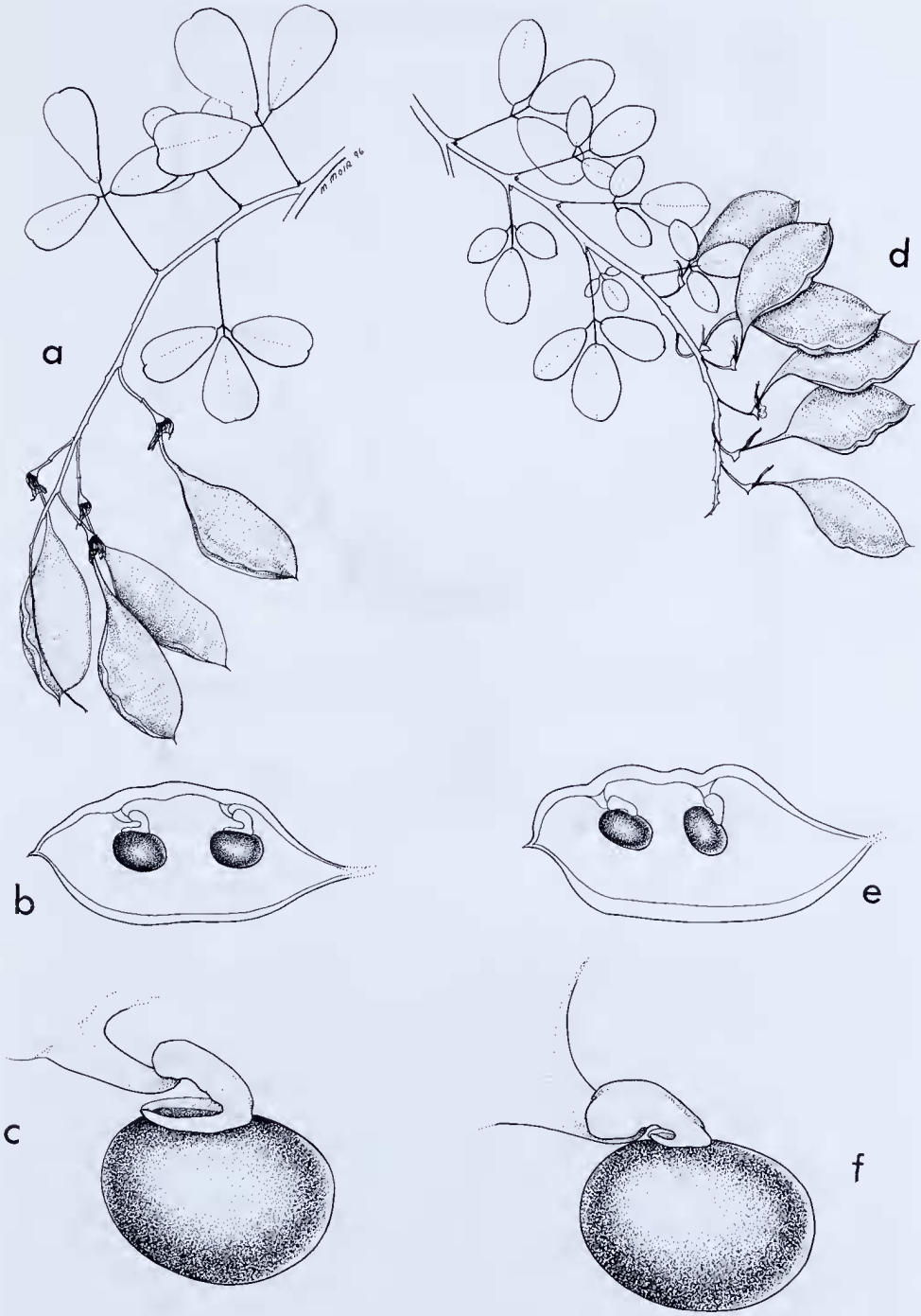


Fig. 1. a-c *Goodia lotifolia* var. *lotifolia* (J.H. Ross 3709): a fruiting twig, x1; b open pod showing attachment of seeds, x2; c seed, x8. d-f *Goodia medicaginea* (J.H. Ross 3697): d fruiting twig, x1; e open pod showing attachment of seeds, x2; f seed, x8.

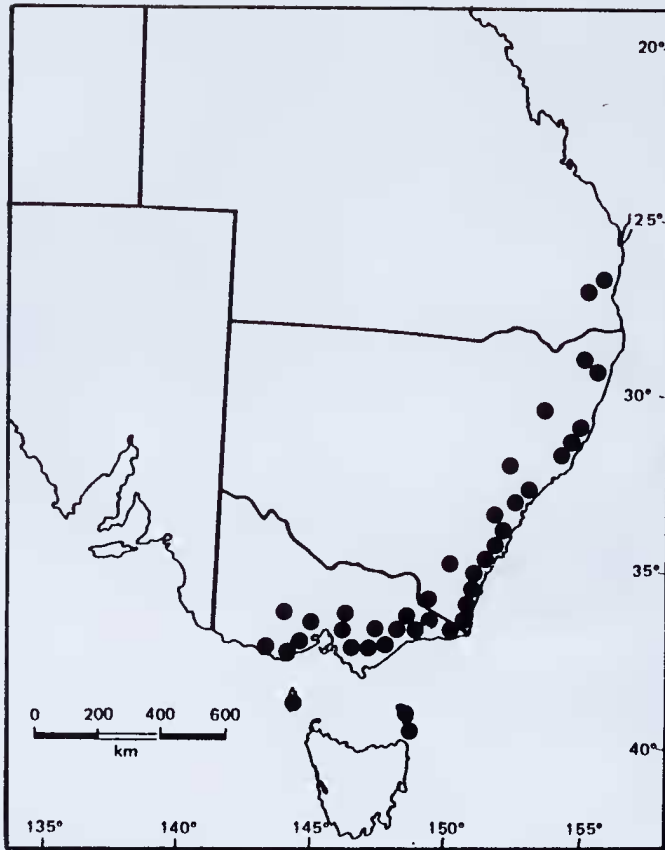


Fig. 2. Distribution of *Goodia lotifolia* var. *lotifolia*.

Tasmanian material of var. *pubescens* in which the leaves and pods are generally small.

**2. *Goodia medicaginea*** F. Muell., *Fragm.* 1: 10 (1858). Type: Australia Felix, F. Mueller (lectotype here selected, MEL 237139).

*Goodia lotifolia* sensu Meisn. in Lehm., *Pl. Preiss.* 1: 88 (1844).

*Shrub* to 2.5m high, usually spreading and up to 4m wide, young branchlets glabrous to densely clothed with appressed or spreading hairs. *Leaflets* obovate to obovate-cuneate or elliptic, 4–30(–40) mm long, 2–20(–30) mm wide, glabrous throughout or lower surface sparingly to densely clothed with short appressed hairs, occasionally the upper surface with a few scattered appressed hairs, dull blue-green when mature; petiole 5–25 mm long. *Racemes* usually 1–10(–20) cm long. *Flowers* 6–10.5 mm long, on pedicels up to 5 mm long. *Calyx* 3–5.3 mm long, sparingly to densely clothed with appressed or spreading hairs externally, the 3 lower teeth usually shorter than the tube in mature flowers. *Standard* dull yellow or orange-yellow internally with a conspicuous reddish- or purplish-brown horseshoe-shaped flare around the throat, suffused with dark red externally; wings and keel often suffused with brown or purplish-brown. *Pods* obliquely ovate to oblong, narrowed basally into a slender stipe, 1.2–2.3 cm long excluding the stipe. *Seed*: foot of aril up to 1.1 mm long. **Western Golden-tip** (Fig. 1d–f).

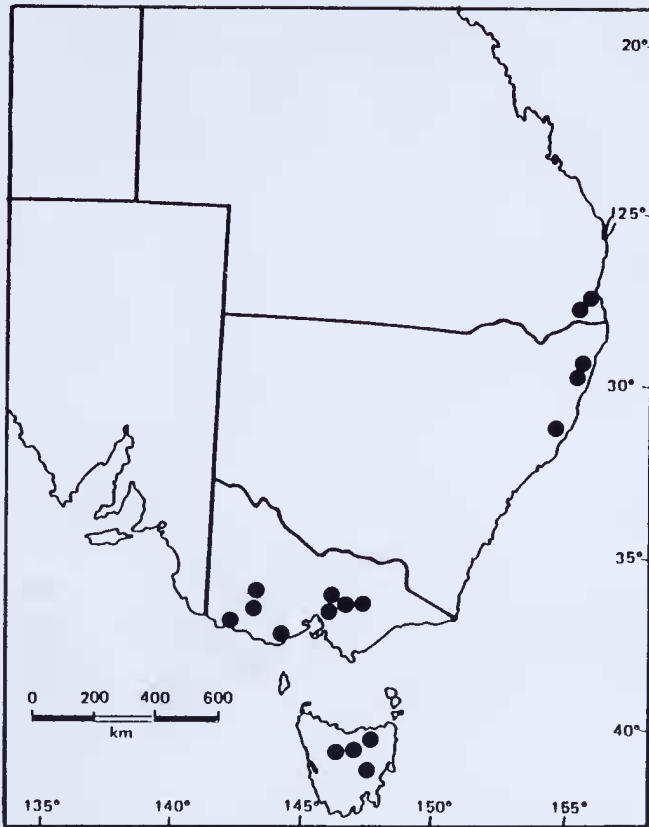


Fig. 3. Distribution of *Goodia lotifolia* var. *pubescens*.

#### *Distribution and Habitat*

Found in southern Western Australia; southern South Australia and Kangaroo Island; south-eastern Queensland; inland New South Wales; and western, central and north-east Victoria (Fig. 4). Recorded from a diversity of habitats including coastal heath, mallee, creek beds and open sclerophyll forest and found on limestone, sand, laterite, quartz, clay, loam and granitic soils. Tends to favour drier sites than *G. lotifolia* and often found on hot west- or north-facing slopes. Flowers usually in August and September; recorded in flower in Queensland in March.

#### *Representative specimens* (280 specimens examined)

WESTERN AUSTRALIA: Esperance District, base of northern slope on Mt Buraminy, *B. Archer* 187 (AD, MEL, PERTH). SOUTH AUSTRALIA: Gawler Ra, hills NE of Kondoolka HS, *J.Z. Weber* 3077 (AD, BRI, MEL). QUEENSLAND: Burnett District, Sixteen Mile L.A., Coomingleh State Forest, *A.R. Bean* 10159 (BRI, MEL). NEW SOUTH WALES: Black Ra., N of Tallebung, *G.M. Cunningham* 1462 and *P.L. Milthorpe* (NSW). VICTORIA: North-east, c. 18 km NW of Wangaratta, *A.D.J. Piesse* 3 (MEL).

#### *Notes*

The distribution of *Goodia medicaginea* is interrupted by several large discontinuities. The largest discontinuity occurs between the Western Australian and the South Australian populations but a large discontinuity also separates the Queensland records

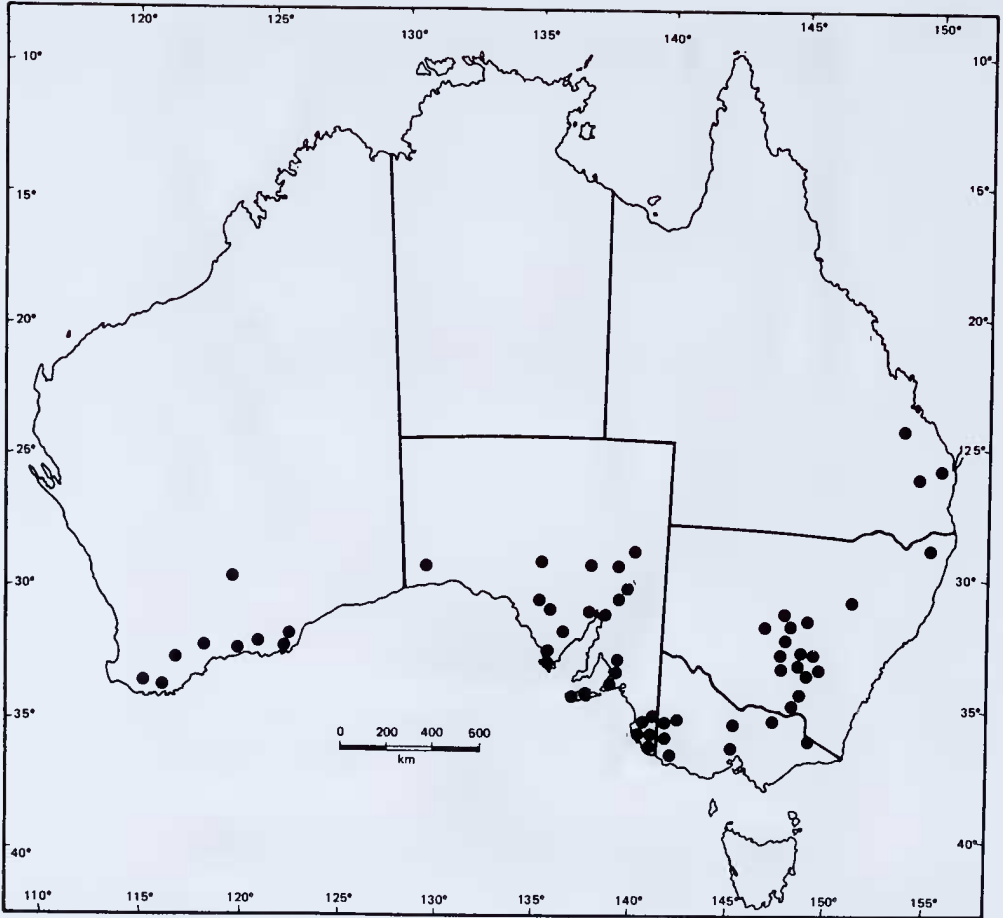


Fig. 4. Distribution of *Goodia medicaginea*.

from the New South Wales populations. It is likely that further populations of *G. medicaginea* will be found in southern Queensland.

The young growth in *G. medicaginea* is often as pubescent as that found in *G. lotifolia* var. *pubescens*.

*Copley 2079* (AD) from c. 7 km W of Yardea Homestead, Gawler Ranges, Northern Eyre Peninsula, is unusual in having large persistent stipules up to 0.8 cm long and unusually large bracts to 11.5 mm long and 2 mm wide and bracteoles up to 7 mm long and 0.8 mm wide.

Mueller's choice of the specific epithet '*medicaginea*' is explained in a letter to Bentham dated 10 September 1863 (Mueller 1863a): 'Is not Meisners *Goodia lotifolia* = *G. medicaginea*, which I called so from some habitual resemblance to *Medicago arborea*'.

#### Typification

The protologue indicates that Mueller based his concept of *G. medicaginea* on a range of material from 'Ad rivulos montium Flinders Range, apud sinus Guichen- et Rivoli Bay, ad amnem Crystal Brook [Crystal Brook] et in variis locis Australiae felicis occidentalis'. A multitude of syntypes and potential syntypes exist at K and MEL and this



illustrates very well the difficulties created by Mueller's decision not to number his collections but to rely instead on names or localities written on his labels. There are at K in Herbarium Hookerianum four sheets of material labelled *Goodia medicaginea* by Mueller; one bears the locality 'Austr Felix', one 'Australia felix', one 'Col. of Victoria' and one 'Scrub of the interior'. None of the labels carries a date but knowledge of Mueller's collecting activities suggests that they were all collected prior to the date of publication of the name and are syntypes. None is a good match of any of the specimens in MEL.

The following collections in MEL labelled by Mueller as *Goodia medicaginea* are regarded as syntypes: between Rivoli Bay and Mount Gambier, 1848 (MEL 630110); Rivoli Bay, undated (MEL 630109); near Rivoli Bay, undated (MEL 237134); Priest-point/ Glenelg, undated (MEL 1058259); Flinders-ranges near Mt Remarkable, Oct. 1851 (MEL 630114); Flinders-ranges, Oct. 1851 (MEL 630112); Crystal brook, Oct. 1851 (MEL 630113); Guichen bay, Aug. 1851 (MEL 630111); St Vinc[ent]. Gulf, 1851 (MEL 237133); Austr felix, undated (MEL 237137); Austral fel., undated (MEL 237138); Australia Felix, undated (MEL 237139).

Although the Rivoli Bay collections are undated, Rivoli Bay was cited in the protologue and it seems reasonable to assume that they were collected while Mueller was still a resident of South Australia and therefore prior to the publication of the species. There is no evidence that Mueller returned to collect in South Australia prior to 1858 after he moved to Victoria in 1852 and took up residence in Melbourne except for a stay of a few days at Mount Gambier in 1857 to visit his sister (Mueller 1857). The specimen from Priest-point/Glenelg was possibly not collected by Mueller. The precise location of Priest-point, Glenelg is uncertain: the name could not be found in any gazetteer and personnel at the State Library of South Australia were unable to shed any light on the locality.

There are two further undated collections in MEL from Reedy-creek, one of which is unnamed (MEL 237136) and the other which bears Mueller's manuscript name '*Goodia intermedia*' (MEL 237132). The epithet on the latter suggests that Mueller may have had second thoughts about the distinctness of his *G. medicaginea*!

A sheet of fruiting material in MEL (MEL 237135) bears a label in Mueller's hand which reads '*Goodia medicaginea* Ferd Mu/Austr felix/Frutex 3-5' alt. ... (illegible)/Jul 53. Dr M'. On the face of it, the specimen appears to be another syntype, but I have some reservations. From what is known of the phenology of the species, it would be extremely unusual to find a specimen in full fruit in July unless the season was exceptional. Although Mueller's exact movements during July 1853 are not clear, it is known that for much of the month he was in or near Melbourne, having only returned in June after an absence on a collecting trip of over four months. Currently the population in closest proximity to Melbourne is the small population at Long Forest Reserve near Melton west of Melbourne, although it is, of course, quite possible that populations were found closer to Melbourne in 1853. There is a suspicion that the label does not belong with the specimen and for this reason this specimen is excluded from consideration as a lectotype. This is unfortunate as it is a good specimen bearing mature fruits and seeds. The description of *G. medicaginea* was published in March 1858 and it is not clear what general area or which specimens Mueller had in mind when citing in the protologue 'et in variis locis Australiae felicis occidentalis'. There is no evidence that Mueller had available to him prior to that date any of the Maxwell, Drummond or Preiss collections from Western Australia so none of their specimens is regarded as syntype material. The first reference by Mueller to Maxwell is contained in a letter to William Haines dated 1 March 1858 in which Mueller (1858a) wrote 'Official letters have been forwarded in this behalf within the month of February to ... Mr G. Maxwell

of Albany, West Australia'. In a letter to John O'Shanassy in June 1858 Mueller (1858b) mentions having received 'in the course of May; from Mr G. Maxwell of Albany a valuable collection of more than 200 kinds of West Australian seed'. Mueller also commented in this same letter that 'The correspondence has been extensive ... to Jam. Drummond Esq, Swan River'. In a letter to Daniel Oliver dated 25 December 1863 Mueller (1863b) mentions 'I have now, for instance, a set of Steetz's botanical relics, one of the largest sets of Preissian plants, also many of Sieber's, and within the next week I shall possess, from another source, one of the largest of Drummond's collections'. It would appear almost certain that by the term 'Australiae felicis occidentalis' Mueller was referring to western Victoria rather than to Western Australia.

When did Mueller become aware that *G. medicaginea* occurred in western Victoria? Mueller visited western Victoria in November 1853. He visited localities where *G. medicaginea* is known to occur and would certainly have had the opportunity during this trip to collect the fruiting specimens labelled as having come from 'Australia felix'. Mueller's fruiting specimens labelled 'Australia felix' bear mature pods and seeds which suggests that they were collected in late spring or early summer. In January 1857 Mueller visited the mouth of the Glenelg river in far south-west Victoria. In September 1883 he collected in the western wimmera and the mallee country between Lake Hindmarsh and the South Australian border but it is unlikely that he would have seen *G. medicaginea* on this trip. In any event, mature pods and seeds are not found on *G. medicaginea* at this time of the year.

When seeking a suitable specimen from among the syntypes to serve as the lectotype of *G. medicaginea*, it was considered desirable to choose a fruiting specimen bearing mature pods and the diagnostic seeds. Unfortunately none of the syntypes with a date of collection bears mature pods and seeds. Attention then focused on the undated fruiting syntypes in MEL of which there are three, namely, MEL 1058259 from Priest-point/Glenelg, and MEL 237138 and 237139 from Australia felix. I here select from among these MEL 237139 as the lectotype of *G. medicaginea*. Although it could be argued possibly that the absence of a date of collection (although undated, circumstantial evidence suggests strongly that it was collected in late 1853) introduces an element of doubt about the suitability of this specimen as the lectotype, it was considered more important to have as lectotype a specimen bearing the diagnostic seeds, than to have an accurately dated specimen that lacks the diagnostic seeds.

### Excluded Species

*Goodia polysperma* A. DC., *Rapp. Pl. Rar. Genève* 2(2): 13 (1824). *Type*: 'L'espèce qui fait le sujet de cet article est un très-petit sous-arbrisseau de la Nouvelle-Hollande, que nous avons recu de divers jardins' (G-DC).

This is a synonym of the South African species *Argyrolobium tomentosum* (Andr.) Druce, *Bot. Soc. Exch. Club Brit. Isles* 1916: 605 (1917).

*Goodia simplicifolia* Spreng., *Syst. Veg.* ed 16, 4: 267 (1827). *Type*: Delaunay, *Herb. Amat.* t. 187 (1819).

This is a synonym of *Hovea elliptica* (Sm.) DC., fide J.H. Ross, *Muelleria* 7: 27 (1989).

### Names of uncertain application

*Goodia retusa* Sweet, *Hort. Brit.* 110 (1826).

This is a *nomen nudum* and the taxon to which Sweet applied the name is not clear.

*Goodia medicaginea* Jacques, *J. Soc. Imp. Centr. Hort.* 10: 116 (1864). Type: 'Hort. Paris, 1863 ... La Nouvelle-Hollande?'

It is not clear whether or not Jacques was formally describing as new the plant that he referred to *G. medicaginea*. I have not located any type material so the application of the name is not clear but, in any event, the name *G. medicaginea* Jacques is a later homonym of *G. medicaginea* Muell. (1858) and therefore illegitimate.

### Acknowledgments

I am most grateful to Dr Barry Conn for arranging for photographs of the potential type material housed in K; to Barbara Archer and Tony Bean for making special collections in Western Australia and Queensland respectively; to Helen Cohn, Library Manager, Royal Botanic Gardens Melbourne, for procuring photocopies of descriptions of species of *Goodia* from some obscure publications; to Sara Maroske for information relating to Mueller's correspondence and travel; to Jenny Tonkin for assistance in the field in South Australia and Victoria; to the Directors of AD, BRI, NSW and PERTH for the loan of specimens or access to their collections, and to Mali Moir for executing the illustrations that accompany this paper.

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